CONTENTS

VOLUME 22

NUMBER 1 — MARCH 1987

The Meteoritical Society Nominations in the Leonard Medal 1
D. Heymann, C.C.A.H. Van Der Stap, R.N. Vis, and H. Verheul:
Carbon in Dark Inclusions of the Allende Meteorite 3
Arthur J. Ehlmann and Klaus Keil: Classification of a Second Group
of Ordinary Chondrites from Texas 17
G. Keller, S.L. D'Hondt, C.J. Orth, J.S. Gilmore, P.Q. Oliver,
E.M. Shoemaker, and E. Molina: Late Eocene Impact Microspherules:
Strigraphy, Age and Geochemistry 25
Steven L. D'Hondt, Gerta Keller, and Robert F. Stallard:
Major Element Compositional Variations Within and Between
Different Late Eocene Microtektite Strewnfields 61
Edward J. Olsen, Bruce D. Dod, Roman A. Schmitt, and Paul P. Sipiera:
Monticello: A Glass-Rich Howardite 81
Daode Wang and Alan E. Rubin:
Petrology of Nine Ordinary Chondrite Falls from China 97
Arthur W. Streumpler and Roy Kaelin, Jr.:
Note — The L5 Bayard Meteorite: A 1982 Find 105
Miscellanea 109

NUMBER 2 — JUNE 1987

Ralph B. Baldwin: Leonard Medal Address 111
Ralph B. Baldwin 111
V.F. Buchwald and Roy S. Clarke, Jr.: The Verkhne Dnieprovsk Iron
Meteorite Specimens in the Vienna Collection and the
Confusion of Verkhne Dnieprovsk with Augustinovka 121
Monika Kumlehn: Transcription of the Names of China's Ancient Meteorites 137
Paul P. Sipiera, Mary J. Becker, and Yosuke Kawachi:
Classification of Twenty-Six Chondrites from Roosevelt County, New Mexico 151
The Meteoritical Bulletin 157
Abstracts of Papers published in Meteoritika 165
Miscellanea 171

NUMBER 3 — SEPTEMBER 1987

Edward R.D. Scott and Frank Wlotzka:
Nazareth Meteorites: Classification and Nomenclature 173

Mitsuru Ebihara and Masatake Honda: Rare Earth Elements in
Ca-Phosphates of Allende Carbonaceous Chondrite 179
Cyrena Anne Goodrich, Klaus Keil, John L. Berkley, J.C. Laul, M.R. Smith,
John F. Wacker, Robert N. Clayton, and Toshiko K. Mayeda:
Roosevelt County 027: A Low-Shock Ureilite with
Interstitial Silicates and High Noble Gas Concentrations 191
John A. O'Keefe: Zhamanshin and Aouelloul: Craters Produced
by Impact of Tektite-Like Glasses? 219
D. Heymann and N. Read: Gas Release and
Ordering of Carbon in the Allende Meteorite 229
Alan E. Rubin and Jeffrey N. Grossman:
Size-Frequency-Distributions of EH3 Chondrules 237
John F. McHone and Ronald Greeley: Talemzane: Algerian Impact Crater
Detected on SIR-A Orbital Imaging Radar 253
B.P. Glass and C.A. Burns: Late Eocene Crystal-Bearing Spherules:
Two Layers or One? 265
Daniel J. Milton and John F. Sutter: Revised Age for the Gosses Bluff
Impact Structure, Northern Territory, Australia, Based on $^{40}Ar/^{39}Ar$ Dating 281
Abstracts of Papers published in Meteoritika 291
Abstracts of Papers published in Meteoritika 299
Miscellanea 307

NUMBER 4 — DECEMBER 1987

Award of the Leonard Medal 309
Award of the Barringer Medal 311

Abstracts

C.B. Agee and D. Walker: Olivine Flotation in a Chondritic Mantle 314
S.O. Agrell and N.F. Charnely: Phosphoran Olivines and Phosphates
of Pallasitic Affinities in Skarns from Pine Canyon,
Piute County, Utah, U.S.A. 314
C. Alexander, R. Hutchison, D. Barber, and M. Davis:
A Metamorphic Model for the Ordinary Chondrites 315
C. Alexander, D. Barber, and R. Hutchison: A Chondrule Origin for the
Rims and Matrices of UOCs: An ATEM and EMPA Study 316
T. Aoyama, H. Takeda, and H. Mori: The Geologic Setting
of the Partly Homogenized Yamato 792769 Polymict Eucrite
on the HED Parent Body 317
Ash, R.D., I.P. Wright, M.M. Grady, C.T. Pillinger, R.S. Lewis, and E. Anders:
An Investigation of Carbon and Nitrogen Isotopes in Cδ
and the Effects of Grain Size Upon Combustion Temperature 319
I. Souza Azevedo, R.B. Scorzelli, J. Danon, and M. Elizabeth Zucolotto:
Mössbauer Spectroscopy Study of the Nova Petropolis Meteorite
and Its Corrosion Mechamism 320
Swroop K. Bains-Sahota and Mark H. Thiemens: A Chemically Produced
Non-Mass Dependent Sulfur Isotope Effect 320
D.J. Barber: An ATEM Investigation of a "Carbonaceous Chondrite" Clast
in the Bencubbin Stony-Iron Breccia 321
R.H. Becker and R.O. Pepin: Noble Gas Components in Bells 322
J.F. Bell: The Meaning of Asteroid Families 323

J.L. Birck and C.J. Allègre: ^{53}Cr Isotopic Anomalies
Related to ^{53}Mn Decay in Old Solar System Matter 325
J.L. Birck and G.W. Lugmair: Ni and Cr Isotopes in Allende Inclusions 326
A. Bischoff, K. Metzler, H. Palme, and B. Spettel:
Chemistry and Petrography of Dark Inclusions from Allende 328
D.F. Blake, F. Freund, R. Shipp, T.E. Bunch, J. Flores, S. Chang,
K.M. Krishnan, C. Echer, and D. Ackland: Analytical Electron
Microscopy of Interstellar Diamond from Allende 329
J.D. Blum, G.J. Wasserburg, J.T. Armstrong, I.E. Hutcheon, J.R. Beckett,
and E.M. Stolper: An Experimental Study of Metallic Diffusion
and Phase Equilibria in Fremdlinge 331
N.Z. Boctor, R.W. Carlson, and F. Tera: Petrology and Shock
Metamorphism of the Monomict Eucrites Cachari and Stannern 332
Bruce F. Bohor: Microspherules and the Dualistic Nature
of the K-T Boundary Clay 333
S.R. Boyd and C.T. Pillinger: Do Nitrogen Isotopes Allow Us to
Relate Terrestrial Mantle Carbon to Meteorite Progenitors? 334
S.R. Boyd, C.T. Pillinger, H.J. Milledge, M.J. Mendelssohn, and M. Seal:
Another Way to Fractionate Isotopes 334
John P. Bradley and Mark S. Germani: Continuing Electron Microscopic Studies
of Thin-Sectioned Interplanetary Dust 335
F. Brandstätter, G. Kurat, and A.L. Graham: Primitive Carbonates in Y82042 (C2) 336
Adrian J. Brearley, Edward R.D. Scott, and Klaus Keil: Carbon-Rich Aggregates
in Ordinary Chondrites: Transmission Electron Microscope
Observations of Sharps (H3) and Plainview (H Regolith Breccia) 338
Adrian J. Brearley, Edward R.D. Scott, and Ian D.R. Mackinnon:
Electron Petrography of Fine-Grained Matrix
in the Karoonda C4 Carbonaceous Chondrite 339
D.T. Britt and C.M. Pieters: The Optical Effects
of Surface Processes on Small Bodies 340
C.L. Broadhurst, M.J. Drake, T.J. Bernatowicz, and B.E. Hagee:
Experimental Partitioning of Ar Between Anorthite and Basaltic Liquid,
and Implications for the Origin of Terrestrial Planet Atmospheres 342
V.F. Buchwald: Thermal Migration III: Its Occurrence in Cape York
and Other Iron Meteorites 343
R. Burgess, I.P. Wright, and C.T. Pillinger: The Distribution
of Sulphur in Nakhla and Shergottite Meteorites 344
John G. Burke: Meteoritics: The Emergence of an Interdisciplinary Science 346
C.A. Burns and B.P. Glass: Microtektites and Geomagnetic Reversals Revisited 346
C. Caillet, D. Velde, and P. Bachelery: A New Unequilibrated
H Chondrite from Reunion Island 347
W.C. Carey, R.M. Walker, and J.P. Bradley: Interplanetary Dust Particles
and Comet Halley: A Comparative Study 348
W. Carey, E. Zinner, P. Fraundorf, and R.S. Lewis: Ion Probe and TEM Studies
of a Diamond Bearing Allende Residue 349
I. Casanova, M.L. Miller, K. Keil, R. Wieler, E.A. King, and A. San Miguel:
Brecciation and Impact-Melt Rock Formation of Ordinary Chondrites:
Evidence from a Study of Spanish Meteorites 351
Jac Cashore: The Development of Overlapping Ejecta Blankets
by Monte Carlo Modeling of Lunar Megaregolith 351
W.A. Cassidy, John Schutt, C. Koeberl, K. Yanai, L. Lindner, and A. Mardon:
The Meteorite Concentration at the Lewis Cliff, Antarctica, Ice Tongue 353
Clark R. Chapman: Distributions of Asteroid Compositional Types
with Solar Distance, Body Diameter, and Family Membership 353
Chai Chifang, Mao Xueying, Ma Shulan, and Bai Shunliang:
Extinction Event and Geochemistry at the End of Devonian 354

Chai Chifang, Mao Xueying, Ma Shulan, Wang Sichao, and Su Qiong:
Implication of Cosmogenic Radionuclides and Trace Elements
in the Ningqiang Chondrite 355
Mireille Christophe Michel-Levy: Microchondrules in the
Mezo-Madaras and Krymka Unequilibrated Chondrites 355
S.M. Cisowski: Magnetic Studies on K/T Boundary Clays 356
S.M. Cisowski and M. Fuller: Paleointensity of Lunar Samples 357
R.S. Clarke, Jr., E. Jarosewich, A.E. Rubin, and A.R. Philpotts:
The Damaging Wethersfield Meteorites: Recognition of a Trend? 358
Donald D. Clayton: Sunocon Oxidation and Sulfidation
of the Isotopes of Ca, Ti, Cr and Fe 359
R.N. Clayton, T.K. Mayeda, and K. Yanai: Oxygen Isotopes in Ureilites 360
D.W. Collinson: Application of Palaeomagnetism to Investigations
of Ordinary Chondrites and Early Solar System Magnetic Fields 360
D.W. Collinson: Magnetic Properties of the Olivenza Chondrite — Possible
Implications for Its Evolution and an Early Solar System Magnetic Field 361
G. Crozaz, S. de Chazal, L. Lundberg, E. Zinner, P. Pellas and M. Bourot-Denise:
Actinides and Rare Earth Elements in Chondrites 362
Andre M. Davis, Richard W. Hinton, and Glenn J. MacPherson:
Relict Grains in a Vigarano Refractory Inclusion 363
Jeremy S. Delaney: The Lewis Cliff 85305 Eucrite, and Shock Effects in Eucrites 365
A. Duba and G. Will: Differentiation of Carbon-Bearing Meteorite
Parent Bodies by Electromagnetic Heating 366
S.A. Durrani and K. James: The Registration Temperature Dependence
of Heavy-Ion Track-Etch Rates in Crystals: Implications for
Cosmic-Ray Identification and Fission-Track Dating of Meteorites 367
Mitsuru Ebihara: Chemical Compositions of Some EH Chondrites 368
K. Ehlers and A. El Goresy: Normal and Reverse Zoning in Niningerite:
A Novel Key Parameter to the Thermal Histories of EH-Chondrites 368
A. El Goresy and K. Ehlers: Sphalerite Relations in EH-Chondrites:
Textures, Compositions, Diffusion Profiles and
Their Relevance to Temperature and Pressure History 370
W.v. Engelhardt and E. Luft: Origin of Moldavites 371
E.U. Engström: Elemental Mapping of Inclusions in the
Odessa Iron Meteorite by Secondary Ion Mass Spectrometry 372
K. Ernstson, H. Feld, and J. Fiebag: Impact Hypothesis
for the Azuara Structure (Spain) Strengthened 373
O. Eugster and S. Niedermann: On the Origin and Isotopic
Composition of Trapped Xe in Lunar Anorthosite 65315 373
O. Eugster, H. Graf, and S. Niedermann: ^{81}Kr-Kr Exposure Ages of Chondrites 375
Albert Fahey, Ernst Zinner, and Glenn MacPherson: Where Do Hibonites
with Anomalous Ti and No Excess ^{26}Mg Come From? 377
Bruce Fegley, Jr.: Carbon Chemistry and Organic Compound
Synthesis in the Solar Nebula 378
I.A. Franchi, I.P. Wright, and C.T. Pillinger: Nitrogen Isotopes in Iron Meteorites:
Differences Between Magmatic and Non-Magmatic Groups 379
K. Fredriksson and B.J. Fredriksson: Partition of Major Elements in Chondrules 380
K. Fukunaga, J. Matsuda, K. Ito, K. Nagao, and M. Miyamoto:
Chemical Vapor Deposition of Diamonds from CH_4-H_2 Gas Mixture
and the Origin of Diamonds in Meteorites 381
D.H. Garrison, C.T. Olinger, C.M. Hohenberg, and J.N. Goswami:
Surface-Correlated Noble Gases from Grain-Size Separates of Kapoeta 382
Everett K. Gibson, Jr.: Carbon and Sulfur Abundances in Antarctic Meteorites 384
Iain Gilmour, Charles J. Orth, and Robert R. Brooks:
Carbon at a New K-T Boundary Site in New Zealand 385

B.P. Glass: Clinopyroxene-Bearing Spherules
in the North American Tektite Layer from DSDP Site 612
Drilled on the Continental Shelf Off New Jersey 388
P.S. Goel and A.N. Thakur: Isotopically Anomalous Hg in Meteorites 389
J.L. Gooding, K. Aggrey, and D.W. Muenow: Pre-Terrestrial Volatile
Compounds in Shergottites and Nakhlites 391
C.A. Goodrich, J.H. Jones, and A.H. Spitz: Siderophile Element
Tests of Ureilite Petrogenesis Models 392
Monica M. Grady and C.T. Pillinger: Unusual Nitrogen
Isotopic Composition of Polymict Ureilites 394
J.N. Grossman, R.N. Clayton, and T.K. Mayeda: Oxygen Isotopes
in the Matrix of the Semarkona (LL3.0) Chondrite 395
R. Kyle Guimon and Derek W.G. Sears: Thermoluminescence of Separated
Allegan Chondrules and Chondrite Thermal History and Cooling Rates 396
H. Haack, P.H. Warren, and K.L. Rasmussen: Effects of
Regolith Insulation on Thermal Evolution of Asteroids 398
David J. Tholen, Dale P. Crukshank, and Jay Goguen:
Do Trojan Asteroids Have Oddball Shapes? 399
C.P. Hartmetz and D.W.G. Sears: Thermoluminescence Properties
of Shocked and Annealed Plagioclases with Implications for Meteorites 400
Jack B. Hartung: The Giordano Bruno Myth and Other Midsummer Events 402
Ralph Harvey: Statistical Comparisons of Antarctic and Modern Falls Meteorites 403
Fouad A. Hasan and Derek W.G. Sears: The Natural
Thermoluminescence of Meteorites and Their Orbits 403
A. Hashimoto, J.A. Wood, and A. Weinberg: Experimental Determination
of $Ca(OH)_2$ Vapor Pressure as a Key to Understanding
the Alteration of Ca,Al-Rich Inclusions 405
C.J. Hatton, J.E. McMillan, and J.C. Barton:
A Search for Super Heavy Elements in an Iron Meteorite 406
F. Herbert and C.P. Sonett: Electromagnetic Heating in the
Early Solar System: The Weak Solar Wind Case 407
U. Herpers, S. Vogt, R. Wieler, P. Signer, J. Beer, M. Suter, and W. Wölfli:
Cosmic Ray Records in Antarctic Achondrites as Indicators of Pairing 407
Roger H. Hewins: Partial Melting, Fractionation and Magma Mixing in HED Basalts . . 408
A.R. Hildebrand, T.D. Jones, and L.A. Lebofsky: Is Ceres Differentiated? 410
Peter N. Holden and Michael J. Gaffey: The Detection of
Porphyrin-Like Features in Reflectance Spectra
of Carbonaceous Chondrites 412
Britt A. Holmén and John A. Wood: Refractory Inclusions
in the Kaba CV3 Chondrite 413
Gary R. Huss: Chondrules: Produced by an Active Early Protosun? 414
R. Hutchison, J.E. Chisholm, and G.M. Biggar: Low-Ca Pyroxene
Systematics and Their Relevance to Chondrules and Chondrites 415
T.R. Ireland: Correlated Morphological, Chemical, and Isotopic
Systematics of Hibonites from the Murchison Carbonaceous Chondrite 416
Emil Jagoutz: New Light on Shergottites: ALHA 77005, the Shock Age 417
O. Jentsch and L. Schultz: Trapped Noble Gases
in Silicate Inclusions of the Landes Iron Meteorite 418
Elmar K. Jessberger, Alexander Christoforidis, Martin Solc, and Jochen Kissel:
News on Halley's Dust 419
K.P. Jochum and H. Palme: Abundances and Ratios
of Refractory Elements in SNC-Meteorites and Eucrites 420
John J. Jones: An Evaluation of Proposed Parental Eucritic Magmas 422
S. Jovanovic and G.W. Reed, Jr.: Hg Concentrations In
and Geothermometry of Antarctic Achondrites 423

S. Jovanovic and G.W. Reed, Jr.: Isotopically Anomaloys Hg in Antarctic Meteorites . . . 424
Gregory W. Kallemeyn and Alan E. Rubin: The Ningqiang Meteorite:
An Anomalous CV Chondrite 425
D.L. Keeling, K. Marti, and H.E. Newsom: Nitrogen Anomalies
in Weatherford Metal Clasts 426
S. Kelly and G. Turner: Laser Probe ^{40}Ar-^{39}Ar Investigation
of the Polymict Breccia Bencubbin 427
Trude V.V. King and W. Ian Ridley: Relation of Spectroscopic
Reflectance of Olivine to Mineral Chemistry 428
Christian Koeberl and Billy P. Glass: Chemical Variations
in Blue Zhamanshinites (Zhamanshin Crater, USSR) 429
Hideyasu Kojima and Keizo Yanai: Alteration Process
of Chondrules in CM Chondrites 430
Alfred Kracher: Behavior of Chromium
during Differentiation of Chondritic Asteroids 431
David A. King and John A. Wood: Fe,Ca-Rich and Mg-Rich Chondrule Rims
in the Kainsaz (CO3) Chondrite: Evidence of Fluctuating Nebular Conditions 432
S.M. Kuehner and L. Grossman: Petrography of a
Corundum-Bearing Compound Allende Inclusion 433
G. Kurat, F. Brandstätter, E. Pernicka, and A. Kracher/
Bachmut (L6) Chondrule J 2689: Metamorphism Versus Metasomatism 434
G. Kurat, Th. Ntaflos, M. Mayr, and A.L. Graham:
Isolated Olivines in Y82042 (C2): Fractional Condensation? 435
D. Lal, J.F. Wacker, R. Poreda, and H. Craig: Diffusion of Helium
in Diamonds and Implications for Primordial Helium in the Earth 437
J.W. Larimer: Carbon Reduction During Metamorphism
and Planetary Processing: Does It Work? 438
John R. Laughlin, Richard W. Hinton, Andrew M. Davis, and A. Bischoff:
Rare Earths in Rim and Core Perovskite in a CAI: Partitioning Versus Volatility . . . 439
B. Lavielle, K. Marti, J. Wacker, and P. Pellas:
In-Situ Produced Fission Xenon Components in Chondrites 440
F.A. Levi, E. Bilancia, and G.R. Levi-Donati:
X- and Gamma-Ray Observation of Stony Meteorites:
Further Results; Improvement of Methods and Techniques 441
G.R. Levi-Donati: Petrological Features of the Nagy-Borové,
Czechoslovakia, Stones: A Comparison with Other L5 Ordinary Chondrites 443
Roy S. Lewis, David Bright, and Eric Steel: Presolar Diamonds (Cδ)
in Carbonaceous Chondrites: Size Distribution 445
Marilyn M. Lindstrom: How Many Impacts Provided
the Lunar Meteorites? Geochemical and Petrologic Evidence 446
R.D. Loss, K.J.R. Rosman, and J.R. De Laeter: A Search for
Isotopic Anomalies in Residues from the Allende Meteorite 447
Laura L. Lundberg, Ghislaine Crozaz, and Harry Y. McSween, Jr.:
Allan Hills 77005: In-Situ Rare Earth Element Analysis
by Secondary Ion Mass Spectrometry 447
D. Luzius-Lange, H. Palme, and G. Brey: On the Oxidation State
of Acapulco and Related Chondritic Meteorites 449
Ian D.R. Mackinnon, Charles Lindsay, John P. Bradley, and Bart Yatchmenoff:
Porosity of Serially Sectioned Interplanetary Dust Particles 450
Glenn J. MacPherson, Andrew M. Davis, John R. Laughlin, and Richard W. Hinton:
Isotopic Heterogeneity in a Forsterite-Rich FUN Inclusion 451
G. Manhes, C. Göpel, and C.J. Allegre: High Resolution Chronology
of the Early Solar System Based on Lead Isotopes 453
Ursula B. Marvin: Reflections on the History
of the Meteoritical Society at the 50th Annual Meeting 454

David S. McKay, Ruth A. Barrett, and Ronald P. Bernhard:
Impact Damage to Solar Maximum Satellite Caused by
Micrometeorites and Microparticle Orbital Debris 455
G. McKay and J. Wagstaff: Metasomatic Alteration of Shergotty?
Evidence from Petrography and Phase Compositions 456
Harry Y. McSween, Jr. and Deana S. Sneyd: Chondrite Fabrics — The Shocking Facts . . 457
K. Metzler and A. Bischoff: Accretionary Dark Rims in CM Chondrites 458
R. Michel, P. Dragovitsch, F. Peiffer, R. Stück, S. Theis, P. Enblert,
F. Begemann, H. Weber, P. Signer, R. Wieler, D. Filges, and P. Cloth:
Modelling of the Interaction of Galactic Protons with Meteoroids
by Thick Target Experiments and Thin Target Calculations 460
R. Michel, P. Dragovitsch, F. Peiffer, R. Stück, S. Theis, P. Enblert,
F. Begemann, H. Weber, P. Signer, R. Wieler, D. Filges, and P. Cloth:
On the Production of Neon Isotopes by Galactic Protons 461
Tang Ming, Roy S. Lewis, and Edward Anders: Diamond and Silicon Carbide:
Carriers of Presolar Noble Gases in Carbonaceous Chondrites 462
Y. Miura, K. Fujisaki, and Y. Fujisaki: Amorphous State and Formation Process
of Plagioclase Feldspar in Chondrites and Terrestrial Impact Rocks 463
M. Miyamoto: Weathering of Meteorites As Inferred
from the Strength of Hydration Bands Near 3μm 464
A.D. Morse, D.W.G. Sears, R.K. Guimon, R. Hutchison, I.P. Wright, C.O. Alexander,
and C.T. Pillinger: Secondary Alteration History of Type 3 Ordinary Chondrites . . . 465
Hiroko Nagahara, I. Kushiro, B.O. Mysen, and H. Mori:
Vaporization and Condensation Experiments of Olivine Solid Solution 466
H. Nagai, T. Kobayashi, M. Honda, M. Imamura, and T. Kobayashi:
Cosmogenic Aluminum-26 and Beryllium-10 in Meteoritic Irons 467
Clive R. Neal and Lawrence A. Taylor: The Petrogenesis of Lunar Granite
from a Basaltic Magma: Extreme Fractional Crystallization
with Subordinate Silicate Liquid Immiscibility 470
H.E. Newsom: Constraints on the Core Size of the
Impactor for the Single Impact Origin of the Moon 471
A.O. Nier, D.J. Schlutter, and D.E. Brownlee: Helium and Neon
Isotopes in Deep Pacific Cosmic Dust Particles 472
K. Nishiizumi, J.R. Arnold, D. Elmore, P.W. Kubik, J. Klein, and R. Middleton:
Terrestial Ages of Antarctic and Greenland Meteorites 473
S.C. Okulewicz: Matrix Chromites within EET 83212 and EET 83235
Polymict Achondrites 474
C.T. Olinger, D.H. Garrison, C.M. Hohenberg, J.N. Goswami, and M.W. Caffee:
Cosmogenic Neon from Single Grains of Gas-Rich Meteorites 475
U. Ott, H.P. Löhr, and F. Begemann: Noble Gases in ALH 84025:
Like Brachina, Unlike Chassigny 476
H. Palme, B. Spettel, D. Wark, F. Wlotzka, and W. Stegmann:
Coarse Grained Ca,Al-Rich Inclusions from Allende,
Leoville and Other CV-Chondrites: A Comparison 477
P.P. Parekh, J.B. Cumming, and A.V. Murali: A Novel Approach to the
Determination of Iridium Using Ge(Li) — NaI(Tl) Coincidence —
Anticoincidence Gamma Ray Spectrometry 478
R.L. Paul and M.E. Lipschutz: Trace Elements in Antarctic
and Non-Antarctic Howardites, Eucrites and Diogenites (HED):
A Progress Report 479
S.J. Pearce and R.D. Russell: Inversion of Cosmogenic Data from Meteorites 480
P. Pellas, C. Perron, M. Bourot-Denise, C. Fiéni, M. Ghelis, and G. Crozaz:
Was Cm-248 Alive in the Early Solar System? 481
M. Prinz, M.K. Weisberg, C.E. Nehru, and J.S. Delaney: Black Inclusions
of Carbonaceous Chondritic Matrix in Polymict Ureilites 482

C.A. Prombo and G.W. Lugmair: Ca and Ti Isotope Anomalies in Allende HN-3 and Bulk Kakangari 483
Patrick M. Radomsky and Roger H. Hewins: Chondrule Texture/Composition Relations: Implications for a Temperature Maximum in the Chondrite Region of the Nebula 484
G.M. Raisbeck and F. Yiou: ^{10}Be and ^{26}Al in Micrometeorites from Greenland Ice 485
R.S. Rajan and G.W. Lugmair: Neutron Capture Effects in Asteroidal Regoliths 486
William F. Read: At Least Three Bubble-Bearing Layers of Impact Spherules in the Ordovician of Wisconsin 487
K.B. Reuter, D.B. Williams, and J.I. Goldstein: Low Temperature Phase Transformations in the Metallic Phases of Meteorites 488
Alan Rice: Spallation of the Near Side of the Moon and Generation of Flood Basalts on Shock Unloading Due to Bolide Impact on the Far Side of the Moon 489
Frans J.M. Rietmeijer and Ian D.R. Mackinnon: Interstellar Titanium-Oxides in Interplanetary Dust 490
François Robert, Jérôme Halbout, and Marc Javoy: Hydrogen Isotopic Contamination During HF-HCl Dissolution and H_2O_2 Oxidation of Bulk Carbonaceous Chondrites 491
Alan E. Rubin and Jeffrey N. Grossman: Size Frequency Distributions of EH3 Chondrules 493
S.K. Runcorn: Primaeval Lunar Satellites and the Origin of the Moon 494
Graham Ryder and A.V. Murali: Mineralogy and Chemistry of Antarctic Aubrites 495
V. Saikumar and J.I. Goldstein: An Evaluation of the Methods for the Determining Cooling Rates of Iron Meteorites 496
Edward R.D. Scott and G. Jeffrey Taylor: Accretion of Asteroids — Evidence from Meteorites 497
C. Ronald Seeger, Frank Asaro, Helen Michel, and Anne V. Noland: The Search for Jeptha Knob Iridium 498
V.L. Sharpton and Kevin Burke: Cretaceous-Tertiary Impacts 499
Masako Shima and S. Murayama: Cosmogenic-Radioactive Nuclides in the Chondrite Kokubunji 500
Zhang Shuyuan: Meteorite — Focus of Information on the Universe, the Earth, and the Life 501
Wu Siben and Zhang Shuyuan: Significance of the Geoscience in the Duolun Crater Impact Event 502
P.P. Sipiera, M.J. Becker, and B.D. Dod: Preliminary Classification of an Additional Eight Chondrites from Roosevelt County, New Mexico 504
A.H. Spitz and C.A. Goodrich: Rare Earth Element Tests of Ureilite Petrogenesis Models 506
Ian M. Steele and J.V. Smith: Enstatite in E-Chondrites, Quantitative Cathodoluminescence and Minor Elements: I, Reconnaissance of ALHA 77295,9 . . 507
Thomas Stephan and Elmar K. Jessberger: ^{40}Ar-^{39}Ar Ages of Types 3 and 4, L and H Chondrites from the Antarctica 509
P. Swan, R.M. Walker, B. Wopenka, and J.J. Freeman: 3.4 μm Absorption in Interplanetary Dust Particles: Evidence for Indigenous Hydrocarbons and a Further Link to Comet Halley 510
Hiroshi Takeda: A Coexisting Orthopyroxene-Pigeonite Pair in Yamato 791538 and Formation Condition of Ureilites 511
Stuart Ross Taylor: The Composition of the Impactor 512
F. Tera, R.W. Carlson, and N.Z. Boctor: Just How Old are the Cumulate Eucrites? 513
J. Testa, J. Arnold, J. Stephens, T. Onaka, Y. Nakada, T. Cahill, and W. Berg: Sub-Micron Extraterrestrial Particles Collected at Balloon Altitudes: Quantity and Preliminary Characterization 514
K. Thiel, J. Peters, W. Graf, and O. Reinwarth: Does There Exist an Accumulation Mechamism for Cosmic Dust in Antarctic Shelf Ice? 515

Noriko Torigoye: Large Mass Dependent Isotopic Fractionation in CAI During Evaporative Metamorphism 516
Allan H. Treiman: Geology of the Nakhlite and Chassigny Meteorites 517
L. Vistisen, H. Hansen, N.O. Roy-Poulsen, and R.S. Clarke, Jr.: Differences Between Two Samples from the Santa Catharina Meteorite as Revealed by Mössbauer Spectroscopy 518
J.F. Wacker: Laboratory Simulation of Meteoritic Noble Gases: Sorption of Ne, Ar, Kr, and Xe On Carbon 519
D. Walker and C.G. Agee: Novel Compaction Mechanism for Ureilite Meteorites 521
Paul H. Warren, Gregory W. Kallemeyn, and Eric A. Jerde: Major Elements and Trace Siderophile Elements in Four Lunar Meteorites 522
Peter Wasilewski: Magnetic Record in Chondrite Meteorites — Microstructure, Magnetism, and the FeNi Phase Diagram 523
Peter Wasilewski: Magnetic Record in Chondrite Meteorites — The Shock Induced Overprint 524
John T. Wasson, Alan E. Rubin, and Willy Benz: Heating of Primitive, Asteroid-Size Bodies by Large Impacts 525
M.K. Weisberg, M. Prinz, C.E. Nehru, and J.S. Delaney: Barred Olivine-Textured Bencubbin Major Silicates: A Ureilite Connection? 526
R.C. Wiens and R.O. Pepin: Where in the Glass is the Gas? Siting Studies on Shergottite EETA 79001 and Laboratory Shocked Analogues 527
R.E. Witkowski, W.A. Cassidy, and G.W. Penney: Possible Submicron-Size Cosmic Dust Particles Collected at the SPO 529
Frank Wlotzka: Equilibration Temperatures and Cooling Rates of Chondrites: A New Approach 529
Wendy S. Wolbach, Edward Anders, Iain Gilmour, and Monica M. Grady: Detailed Carbon Profiles Across the K-T Boundary At Woodside Creek, New Zealand 531
A.W. Wolfendale: Longterm Variations in the Intensity of Galactic Cosmic Rays 533
John A. Wood: Thermal Processing of Chondrite Components in the Nebula: Where and How? 533
D.S. Woolum, D.S. Burnett, M.L. Johnson, and S.R. Sutton: Melilite Crystal/Liquid Partitioning of Refractory Lithophiles 534
I.P. Wright, M.M. Grady, and C.T. Pillinger: Carbon and Nitrogen in Nakhla and EETA79001,239 535
Kenzo Yagi, Makoto Kimura, Yoshimasu Kuroda, and Kan-ichi Momose: Petrology and Magnetic Properties of Chiang Khan, Thailand, Meteorite 536
Keizo Yanai and Hideyasu Kojima: Pair Problem on Lunar Meteorites Including Newly Identified Yamato-793274 538
F. Yiou and G.M. Raisbeck: Cosmic Spherules from an Antarctic Ice Core 539
M.G. Zadnik, C.B. Smith, U. Ott, and F. Begemann: Crushing of a Terrestrial Diamond: $^3He/^4He$ Higher Than Solar 540
B. Zanda and J. Audouze: Interaction of Galactic Cosmic Rays with Meteorites 541
E. Zinner, A.J. Fahey, K.D. McKeegan, and J.N. Goswami: Isotopic Structures in Murchison Hibonites: O, Ca, and Ti 542
M.E. Zolensky, J.L. Gooding, and R.A. Barrett: Mineralogical Variations within the Matrices of CM Carbonaceous Chondrites 544

Miscellanea 547